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Maine Department of Environmental Protection
Bureau of Land & Water Quality
O&M Newsletter
January 2007
A monthly newsletter for wastewater discharge licensees, treatment facility operators, and associated persons

Index

Efficiency Maine

SAVE ENERGY – SAVE MONEY with the Efficiency Maine Business Program

The Efficiency Maine Business Program works with business to save energy and save money. The program offers information and cash incentives to all Maine businesses that install qualified energy efficient electric products. Act now to take advantage of these cash incentives.

Energy efficiency offers short- and long-term benefits to all businesses in Maine. By increasing the energy efficiency of your business, you strengthen your bottom line and help ensure that Maine will remain a desirable place for future generations to live and work.

Custom Cash Incentives

Custom cash incentives are available for a variety of products that save electric energy. Custom incentives must be pre-approved by Efficiency Maine. Custom incentive applications are available directly from Efficiency Maine Business Program Allies. Allies include manufacturers, wholesalers, retailers, and contractors that work with Effiency Maine to promote, install and service energy efficient equipment. Applications are also available on our Web site, efficiencymaine.com.

Services for Maine's Business

In addition to cash incentives, the Efficiency Maine Business Program offers the following services:

- Education and training for businesses and contractors
- Information on purchasing lighting, heating, cooling, motors, and other energy efficient electric products and equipment
- Self-survey tools to help business identify and evaluate electricity savings opportunities
- Help locating participating suppliers and contractors that can assist in the installation and maintenance of energy efficient electric equipment.

- Assistance with qualifying and applying for Efficiency Maine incentives as well as other incentives and opportunities

Elilgibility

- Incentives are available to all Maine businesses including nonprofit organizations, locan and county governments, **water and wastewater facilities,** quasi-governmental and other regional systems.
- Incentives are available for retrofit applications or new construction, unless otherwise specified.

Guidelines

- All Efficiency Maine Incentives are capped **at $50, 000 per business, per calendar year or $100,000 over a two-year period.**
- Custom incentives are available for a variety of products that save electric energy. Custom incentives must be pre-approved by Efficiency Maine.
- For retrofit projects, the amount of the Efficiency Maine custom incentive may be up to 35 percent of the total cost of the efficiency project. For new construction and major renovations as well as replacement of failed equipment, the incentive may be up to 75 percent of the incremental equipment cost. The incentive cap applies in all cases.
- Products purchased with Efficiency Maine incentives must be installed in your place of business in Maine.
- Efficiency Maine reserves the right to monitor and/or inspect the energy use of the products installed.
- Efficiency Maine may publicize your participation in this program, unless otherwise requested.
- This offer may be changed, revised, or discontinued at any time by Efficiency Maine, so find out today how you can benefit.

Find more information and download applications at our Web site, efficiencymaine.com – go to the Business Program. Or call toll-free 866-376-2463.

Efficiency Maine Business Program

Approved Training

January 9, 2007 in Caribou; January 10, 2007 in Ellsworth; February 7, 2007 in Wells; February 8, 2007 in Brunswick – Selecting the Correct Pump - Sponsored by MRWA – approved for 5 hours.
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January 10, 2007 in Norway, ME; January 11, 2007 in Old Town; January 17, 2007 in Machias; January 18, 2007 in Waterville; January 24, 2007 in Presque Isle; January 25, 2007 in Rockland - Biochemical Oxygen Demand – Sponsored by MRWA – approved for 5 hours.
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January 21 - 24, 2007 in Boston, MA – NEWEA Annual Conference – Sponsored by NEWEA – approved for various hours
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February 14, 2007 in Portland, ME - Cured in Place Pipe - Sponsored by JETCC – approved for 6 hours
*****
February 15, 2007 in Brewer, ME - Care of Emergency Generators - Sponsored by JETCC/NEIWPCC – approved for 6 hours
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February 15, Mar 1, 15 & 29, 2007 in Wells, ME - Basic Chemistry Series - Sponsored by JETCC – approved for 6 hours
*****
February 27, 2007 in Presque Isle, ME - Chasing the Thermal Demons & Comparing Alternative Disinfection Systems - Sponsored by JETCC – approved for 6 hours
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March 1, 2007 in North Vassalboro, ME - Comparing Alternative Disinfection Systems for Water/Wastewater Operations - Sponsored by JETCC – approved for 3 hours
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March 2, 2007 in Saco, ME - True Confessions of a Water/Wastewater Operator & Jar Testing to Determine the Proper Chemical Dose - Sponsored by JETCC – approved for 6 hours
*****
March 6, 2007 in Kennebunkport, ME - PVC Valves & Joining Overview - Sponsored by JETCC – approved for 6 hours
*****
March 8, 2007 in Bangor, ME - Facility Operation in Cold Climates - Sponsored by JETCC – approved for 6 hours
*****
March 14, 2007 in Augusta, ME - Maine DEP issues Briefing - Sponsored by JETCC – approved for 6 hours
*****
March 21, 2007 in Winthrop, ME - Chemical Feed System Design, Operation & Maintenance - Sponsored by JETCC – approved for 6 hours
*****
April 10, 2007 in Lewiston, ME - Using Corrosion Control Technologies to Extend the Life of your Equipment - Sponsored by JETCC – approved for 6 hours
*****
April 18, 2007 in Seal Harbor, ME - QA/QC of laboratory Instruments - Sponsored by JETCC – approved for 3 hours
*****
April 18, 2007 in Seal Harbor, ME - Asset Management - Sponsored by JETCC – approved for 3 hours
*****
April 26, 2007 in Winthrop, ME - In-House Process Control Test and Working with Your Contract Laboratory - Sponsored by
*****
JETCC – approved for 6 hours
May 1 & 2, 2007, in North Conway, NH - Advance Process Control for Activated Sludge - Sponsored by NEIWPCC – approved for 12 hours
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Note: JETCC stands for Joint Environmental Training Coordinating Committee – PO Box 487 – Scarborough, ME 04070-0487 – Tel (207) 253-8020

MRWA stands for Maine Rural Water Association - 14 Maine Street, Box 36 - Brunswick, ME 04011 – Tel (207) 729-6569

MWWCA stands for Maine Wastewater Control Association – c/o MMA - 60 Community Drive - Augusta, ME 04330 Tel (207) 623-8428

NEIWPCC stands for New England Interstate Water Pollution Control Commission – 116 John St. – Lowell, MA 01852-1124 – Tel (978) 323-7929

WPETC stands for Wright Pierce Environmental Training Center - 99 Main Street - Topsham, ME 04086 – Tel (888) 621-8156

For Practice

1. Your discharge license requires you to store wastewater in your lagoon for 150 days in the winter. If you have an average influent flow of 172,500 gallons/day and a total pond area of 25 acres (1,089,000 sq.ft.), how much freeboard do you need in your 8-foot deep lagoon?
a. 1.68 ft.
b. 2.16 ft.
c. 3.17ft.
d. 3.75 ft.

2. The term "return sludge" usually refers to sludge from:
a. Primary Clarifiers
b. Anaerobic Digesters
c. Aerobic Digesters
d. Secondary Clarifiers

3. A new industry is planning to locate in your town. They will be discharging process water to your treatment facility. You have received a sample of process water from another factory owned by the same company, which has the same pollutants in the same quantities as the water you will be receiving at your facility. You mix some of the sample with some of your present influent in a ratio comparable to what you expect to receive when the new factory comes on line. When you run an OUR test on this mixture, you note that the respiration rate increases. This indicates:

a. The new waste may require additional aeration to stabilize.
b. The mixture is toxic to the mixed liquor.
c. The sample is over aerated.
d. The MLSS must be decreased to accept this waste.

4. Which disease is not caused by a virus?
a. Polio
b. Cholera
c. Hepatitis
d. AIDS

Water Quality Criteria for Arsenic

In the fall of 2005, Maine's Board of Environmental Protection adopted a new rule, Chapter 584, that revised the State's surface water quality criteria (WQC) for many toxic pollutants. WQC may be set for protection of aquatic life and/or human health, depending on the toxic threats a particular pollutant may present. In updating the WQC, the most current guidance from EPA was used as the basis for the changes. Calculation of the human health WQC depends on several factors including the amount of water consumed (2 L/day), a person's body weight (70 kg), the amount of fish eaten (32.4 g/day), a pollutant's bioconcentration rate in aquatic organisms, the potential a pollutant has to cause cancer and the acceptable increase in the incidence of cancer due to exposure to a pollutant (one new case per million). Separate human health criteria are set for consumption of water and organisms taken from a waterway (fresh water uses) and only consumption of organisms (marine water use). The one significant departure from the EPA guidance was the fish consumption rate. For a decade or so, the Maine Bureau of Health has used a different and higher fish consumption rate that better reflects the general population in Maine versus the value used by EPA as a national default. This rate is the basis for the State's fish consumption advisories that appear in fishing law booklets.

While many WQC were changed, the new, lower levels for Arsenic have generated considerable interest and discussion. While there are WQC for both aquatic life and human health, the latter have been the focus of concern since those values are lower and present the limiting factor for compliance. In some respects Arsenic is unique. When EPA published its revised WQC guidance to the states in 2002, it provided a footnote saying that the agency was currently reassessing the criteria for Arsenic. This means EPA did not update the previous WQC and simply carried them forward pending a reassessment.

The "old" human health criteria for Arsenic and the "new" criteria under Maine's update of its WQC in 2005 are compared below.

	Consumption of water and organisms	Consumption of organisms only
EPA Guidance	0.018 ug/L	0.14 ug/L
Maine WQC, 2005	0.012 ug/L	0.028 ug/L

As can be seen, the Maine values are lower than EPA's guidance, with the larger drop being with the organisms-only use. The sole reason for this is the different fish consumption rates used in each case. EPA continued to base its Arsenic guidance (pending reassessment) on a consumption rate of 6.5 g/day. For updated WQC guidance, EPA used a new consumption rate of 17.5 g/day. But since Arsenic was to be reassessed, the Agency chose to not update the fish consumption rate. In Maine's case, the fish consumption rate was set at 32.4 g/day, and this accounts for all of the difference between the old and new WQC.

Arsenic is somewhat unique in another way. Like some other metals, it can be found in either inorganic or organically-bound forms in the environment. In the case of Arsenic, nearly all of the toxicity is when it is found in the inorganic form. (Note that for Mercury the situation is just the opposite where the inorganic form is less toxic.) Accordingly, Maine's new WQC provide a footnote saying the numeric value is for the inorganic form only.

The test methods historically used for Arsenic, EPA 206.2 or 200.7, measure total metal in all forms. That means they capture both organic as well inorganic forms and thus some of the Arsenic reported to be present is not in a form that is a concern for ambient toxicity as defined by the WQC. Other test methods, notably EPA method 1632, can be used to measure only inorganic Arsenic. This method is very similar to the "clean" method EPA 1631 used for Mercury. The detection limit is about 1000 times lower than the methods now used. Method 1632 is not approved by EPA for use on effluent samples for compliance purposes. However, it is available for investigational purposes, although as with Mercury it is more expensive and samples must be sent to west coast laboratories.

As with all toxicity testing done for under MEPDES permits, compliance is determined at the published reporting limit, currently 5 ug/L in the case of Arsenic. Facilities can have much lower effluent limits in their permits that are calculated using the WQC and the available dilution in the receiving water. However, since approved test methods cannot be relied upon to detect those concentrations, the reporting limit is the practical extent of the regulatory system to define compliance.

With the lowering of WQC, one might think that more discharge sources would need to have an effluent limit and reduce their Arsenic discharges. This is not necessarily the case. From a review of DEP's permit files, approximately 20 facilities had permit limits for Arsenic in their permits in early 2006, before the new WQC were implemented. In April 2006, the DEP amended all permits to update testing schedules to conform with the new rules and updated each facility's status in the process. During that effort, a reasonable potential evaluation was done for all facilities subject to toxicity testing and again about 20 facilities were found to need Arsenic limits when applying the new WQC. This evaluation was done on an individual facility basis only and did not consider any watershed wide allocations, so the comparison of old and new rules is on an apples-to-apples basis. While the total number facilities in the universe having reasonable potential for Arsenic remained about the same, the individual facilities changed. Some fell off the list and other came on under application of the new WQC. One obvious question with this is, if the WQC are more stringent, why did some facilities "escape" under the new rule? As indicated above, the reporting limit is a major factor in determining compliance. Another factor is the five year review window the DEP uses to evaluate a facility's record. Facilities may only occasionally report an Arsenic reading over the 5 ug/L reporting limit and trigger a reasonable potential determination. Other tests may be below the reporting limit and are considered to be in compliance. As the rolling five year window moves and new tests are done, a facility's status may change. Several facilities have had only isolated higher tests over the five year period. For a smaller number, the issue is more chronic with higher Arsenic results being reported on a more consistent basis.

At this point, EPA's path forward in reviewing the current standard is not completely clear. Indications are, however, that the agency will not complete its review of WQC guidance until 2008. The agency may review and potentially change some of the factors noted in the opening paragraph, or perhaps even consider newer ones as it has proposed in updated methodologies for assessment of human health. Until EPA's work is complete, the guidance to the states for setting Arsenic WQC will remain something of a question. When new guidance does become available, the DEP will, of course, review the WQC and make adjustments as needed to reflect the new information. Again, the only difference between the old and new WQC is Maine's use of a fish consumption rate that is more reflective of the State's population.

Recently, the Department has met with various interested parties to discuss the issues outlined here. These and continuing discussions will be very helpful to the Department in developing logical action plans to address evolving test methods, future changes to WQC and related topics. If you have any thoughts on these issues or want more information, you can contact Dennis Merrill at DEP's Augusta office or call him at 278-7788. As new information develops, it will be addressed in future articles or by direct correspondence to individual facilities.

Dennis Merrill

Answers to *For Practice:*

1. c. 172,500 gal/day * 150 days = 25,875,000 gals
   25,875,000 gals / 7.5 cu. ft./gal = 3,450,000 cu. ft.
   3,450,000 cu. ft. / 1,089,000 sq. ft. = 3.17 ft of freeboard

   You would need to draw down your lagoon so that less than 4.8 feet of water remained in the lagoon at the beginning of the storage season.

2. d. Return sludge is the settled mixed liquor containing active microorganisms which is returned to the aeration basin from the secondary clarifiers.

3. a. An increase in the respiration rate indicates that the mixed liquor is using more oxygen. The most common reason for this is that there is additional food that the bugs can easily digest and they need more oxygen. You should check with the industry to find out what the nature of the BOD in there waste is. If you don't have adequate oxygen availability, your bugs may not be able to treat all the waste. The industry may have to install a pre-treatment process to reduce the BOD coming into your plant so that you can maintain adequate treatment.

4. b. The only disease listed which is not caused by a virus is Cholera.

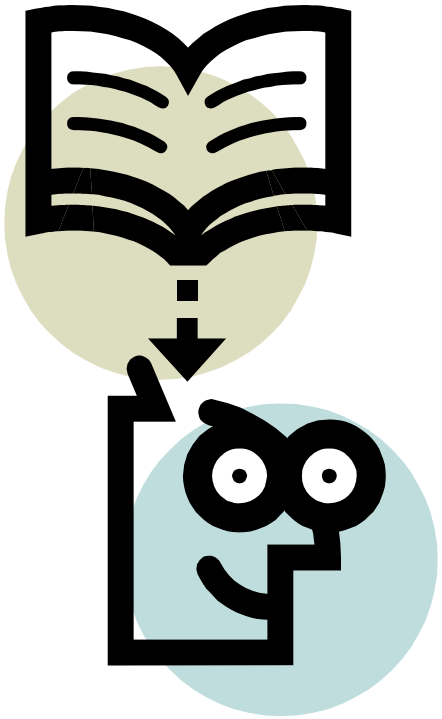
Fall 2006 & Spring 2007 Exams

The results from the Fall 2006 Wastewater Operator Certification Exam have been distributed to the participants. Congratulations to those who passed the exam and we hope that those of you who did not pass will try again.

The results from the exam are as follows:

Test	Test	Passed	Pass Fail
Grade 1	12	7	58.3%
Grade 2	5	4	80.0%
Grade 3	22	9	40.9.%
Grade 4	6	0	0.0%
Grade 5	12	5	41.6%
Grade 1 P/C	4	4	100.0%
Overall	61	29	47.5%

The spring exam will be given in the usual locations on Wednesday, May 16, 2007. Your application must be postmarked to JETCC by March 26, 2007 or hand delivered to their office in South Portland by March 30 2007.



TOXICS PROGRAM:

Have you gotten your Chapter 530 certification in to the Department yet?

Last April many wastewater facilities received a one page permit modification for toxics testing requirements. These were issued in response to modification of the requirements of Chapter 530 which was amended in 2005. Most who received the modification were granted some reduction in testing requirements. With the reduction came a requirement for facilities to file a certification statement with the Department annually by December 31st of each year.

The statement must describe the following:

(a) Changes in the number or types of non-domestic wastes contributed directly or indirectly to the wastewater treatment works that may increase the toxicity of the discharge;

(b) Changes in the operation of the treatment works that may increase the toxicity of the discharge; and

(c) Changes in industrial manufacturing processes contributing wastewater to the treatment works that may increase the toxicity of the discharge.

Facilities should consult Chapter 530 Section 2 (D)(4) for the language of the full requirement. Some facilities may also have this language incorporated into their permit but for many the only reference to this requirement can be found in the April 10 permit modifications under the Reduced Surveillance Testing section.

Facilities that had reduced testing requirements prior to April 2006 probably have the requirement to report clearly spelled out in their permit for many who recently received the reductions in the modification, may not have been aware of this requirement and need to file these as soon as possible.

If there are questions please contact your inspector or Dennis Merrill.

Bill Sheehan